

**REMARKS**

Claims 1-9 are currently pending in the subject application, and are presently under consideration. Claims 1-9 are rejected. New claims 10-12 have been added. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

**I. Rejection of Claims 1-9 Under 35 U.S.C. §102(e)**

Claims 1-9 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,438,354 to Thompson, et al. ("Thompson"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Claim 1 recites that each one of the multiple high power amplifier (HPA) redundancy pools provides downlink feed signals to a respective unique combination of said plurality of downlink antenna apertures. Thompson teaches a reconfigurable payload for a satellite having a flexible antenna system, a variable downconverter technology and a filter technology that all work in combination to allow the payload of a satellite to be reconfigured in orbit (Abstract). The Office Action dated June 24, 2004 (pages 2-3) argues that Thompson teaches the above recited elements of claim 1. Representative for Applicant respectfully disagrees.

It is through a unique combination of providing HPA signals from multiple HPA redundancy pools that allows minimization of waveguide lengths while still optimizing effective isotropic radiated power (EIRP) performance and antenna gain performance. Thompson merely teaches that output signals can be switched to emulate any one of six satellites in a fleet (col. 7, line 64 - col. 8, line 1). However, Thompson is completely silent on HPA redundancy pools providing downlink feed signals to a respective unique combination of downlink antenna apertures, as recited in claim 1. Therefore, Thompson does not anticipate claim 1. Accordingly, withdrawal of the rejection of claim 1, as well as claims 2-9 which depend therefrom, is respectfully requested.

Claim 2, which depends from claim 1, recites that each one of the multiple HPA redundancy pools provides downlink feed signals to the same number of downlink antenna apertures as the other ones of said multiple HPA redundancy pools. The Office Action dated

June 24, 2004 (page 3) asserts that Thompson anticipates claim 2 because there is only a finite number of apertures to be used for downlink transmission for each redundancy pool. However, nowhere does Thompson disclose that each of the multiple HPA redundancy pools provides downlink feed signals to the same number of downlink antenna apertures, as recited in claim 2. That there is a finite number of apertures to be used for downlink transmission for each redundancy pool is not an inherent showing that each of the multiple HPA redundancy pools provides downlink feed signals to the same number of downlink antenna apertures. Therefore, Thompson does not anticipate claim 2. Accordingly, withdrawal of the rejection of claim 2, as well as claims 3 and 4 which depend therefrom, is respectfully requested.

Claim 3, which depends from claim 2, recites that the number of downlink antenna apertures for which each one of the multiple HPA redundancy pools provides downlink feed signals is between 2 and  $N-1$ , where  $N$  is the number of available antenna apertures, greater than or equal to 3. The Office Action dated June 24, 2004 (page 3) asserts that Thompson anticipates claim 3 because there are a plurality of phased array antennas. However, Thompson is silent as to the number of phased array antennas to which each HPA provides a downlink signal, and thus does not disclose that the number of downlink antenna apertures for which each one of the multiple HPA redundancy pools provides downlink feed signals is between 2 and  $N-1$ , where  $N$  is the number of available antenna apertures, greater than or equal to 3, as recited in claim 3. That there are a plurality of phased array antennas taught by Thompson does not inherently show that the number of downlink antenna apertures for which each one of the multiple HPA redundancy pools provides downlink feed signals is between 2 and  $N-1$ . The rejection of claim 3, as argued by the Office Action dated June 24, 2004 (page 3), does not contemplate that Thompson's silence as to the number of phased array antennas to which each HPA provides a downlink signal is such as to teach that the number of downlink antenna apertures for which each one of the multiple HPA redundancy pools provides downlink feed signals could be any number, and not between 2 and  $N-1$ . Therefore, Thompson does not anticipate claim 3. Accordingly, withdrawal of the rejection of claim 3 is respectfully requested.

Claim 4 recites that each one of the HPA redundancy pools is located so that the waveguide run length between it and the furthest downlink antenna aperture of its unique combination of downlink antenna apertures is minimized. The Office Action dated June 24, 2004 (page 4), rejects claim 4 on the same basis as claim 2, in that because the satellite is optimized to work in the Ku-band and since there are redundancy pools, the length of the waveguides from the HPAs to the antennas will be a minimum length, thus allowing only a finite number of antenna apertures to be used for downlink transmission for each redundancy pool. Thompson, however, is silent as to the arrangement of HPA redundancy pool locations such that a waveguide run length between it and the furthest downlink antenna aperture of its unique combination of downlink antenna apertures is minimized, as recited in claim 4. Representative for Applicant respectfully traverses the argument that Thompson inherently teaches minimum waveguide run length because the satellite is optimized to work in the Ku-band and because the satellite contains redundancy pools. It is through a unique combination of providing HPA signals from multiple HPA redundancy pools that allows minimization of waveguide lengths while still optimizing EIRP performance and antenna gain performance. Thompson does not discuss these advantages because they are not an object of the invention of the Thompson. Instead, Thompson teaches a system for providing output signals that can be switched to emulate any one of six satellites in a fleet (col. 7, line 64 - col. 8, line 1). Accordingly, Thompson does not anticipate claim 4. Withdrawal of the rejection of claim 4 is respectfully requested.

Claim 9, which depends from claim 1, recites that, in the event that one of the HPAs in a HPA redundancy pool fails, one of the other HPAs in said HPA redundancy pool drives the downlink feed signal of said one of the HPAs. Thompson is silent as to the failure of HPAs, and thus does not teach that a HPA drives the downlink feed signal of another failed HPA. Therefore, Thompson does not anticipate claim 9. Accordingly, withdrawal of the rejection of claim 9 is respectfully requested.

**II. New Claims 10-12**

New claim 10 depends from claim 1 and recites that each of the HPA redundancy pools further comprises a plurality of hardware grouping strings, wherein the plurality of hardware grouping strings numbers greater than the number of switched signals. Thompson teaches that up to 36 channelized signals are routed through a redundancy ring, and that each of the six boxes in the redundancy ring includes a set of six active travelling wave tubes (TWTs) with linearizers, or high powered amplifiers (HPAs) (col. 7, ll. 49-51 and 62-64). However, Thompson does not teach that the number of HPAs is greater than the number of switched signals, as recited in claim 10.

New claim 11 depends from claim 10 and recites that each hardware grouping string comprises a frequency upconverter, a linearized channel amplifier, and a travelling wave tube amplifier. Thompson teaches that the redundancy ring includes linearizers and TWTs, but does not teach that it includes frequency upconverters, as recited in claim 11.

New claim 12 depends from claim 10 and recites that the plurality of hardware grouping strings comprise active strings and spare strings, wherein the total number of spare strings numbers less than the total number of active strings. Thompson does not teach that any of the HPAs are spares. As such, Thompson further does not teach that the total number of spare strings numbers less than the total number of active strings.

For the above stated reasons, new claims 10-12 should be patentable over the cited art.

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**CONCLUSION**

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,

Date 11/23/07

  
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